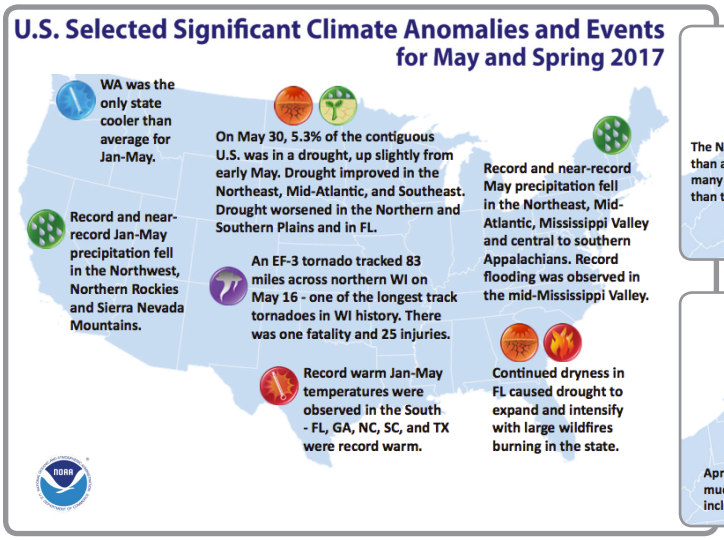
Quarterly Climate Impacts and Outlook

Northeast Region

June 2017

National - *Significant Events for March–May 2017*



The contiguous U.S. had its eighth warmest spring on record with an average temperature of 53.5°F, 2.6°F above the 20th century average. With an average temperature of 46.2°F, 4.7°F above average, it was the ninth warmest March on record. April's average temperature of 53.8°F was 2.7°F above average, making it the 11th warmest on record. May's average temperature of 60.6°F was 0.4°F above average. The contiguous U.S. had its 11th wettest spring on record with 9.39 inches precipitation, 1.45 inches above average. The U.S. precipitation total for March was 2.56 inches, 0.05 inches above average. The U.S. had its second wettest April on record with 3.43 inches of precipitation, which was 0.91 inches above average. May precipitation totaled 3.31 inches, 0.40 inches above average.

Highlights for the Northeast

Drought conditions eased during spring. See Climate Overview and Regional Impacts sections for details.

A major nor'easter dropped up to 48 inches of snow on the Northeast from March 14–15. The 14th became the all-time snowiest day on record at Binghamton, NY, and Scranton, PA, and the snowiest March day on record at Williamsport, PA, and Hartford, CT. The 2016–17 snow season (October–May) is Binghamton's snowiest on record after having its least snowy season in 2015–16. Winds gusted up to 79 mph, with four hours of blizzard conditions in Lawrence, MA. In addition, Atlantic City, NJ, had its wettest March day on record. Impacts from the storm included power outages, coastal erosion and flooding, travel bans, and cancelled flights.

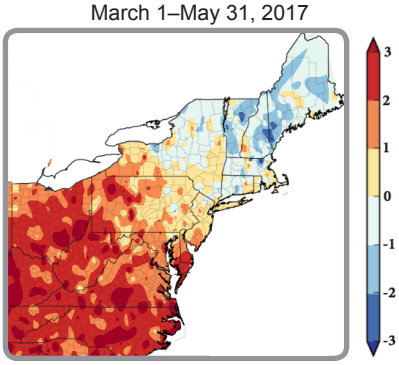
The Northeast had its warmest April on record, as did 14 of the region's major climate sites. Buffalo, NY, had its wettest April on record. LaGuardia Airport, NY, and Burlington, VT, tied their warmest spring temperature on record on May 18.

During spring, 25 tornadoes (13 in Ohio, nine in Pennsylvania, two in Washington, D.C., and one in New York) touched down in the region. Pennsylvania had eight tornadoes on May 1, which is more than double the state's average for May. The tornadoes and straight-line winds of up to 100 mph damaged hundreds of trees and dozens of buildings.

Regional - *Climate Overview for March–May 2017*

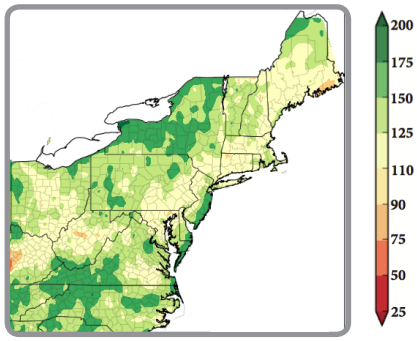
Temperature and Precipitation Anomalies

Departure from Normal Temperature (°F)
March 1–May 31, 2017



Spring was 0.4°F warmer than normal in the Northeast. Six of the region's 12 states saw above-normal temperatures, with three ranking this spring among their top 20 warmest since 1895. Ohio was also warmer than normal. In **March**, all states but West Virginia and Ohio were colder than normal, with the Northeast wrapping up the month 2.6°F below normal. The Northeast had its second warmest **April** on record at 4.5°F above normal. Five Northeast states and Ohio had a record warm April, with the other seven Northeast states ranking this April among their top ten warmest on record. **May** was 0.6°F colder than normal for the Northeast, with ten states plus Ohio experiencing below-normal temperatures.

Percent of Normal Precipitation (%)
March 1–May 31, 2017

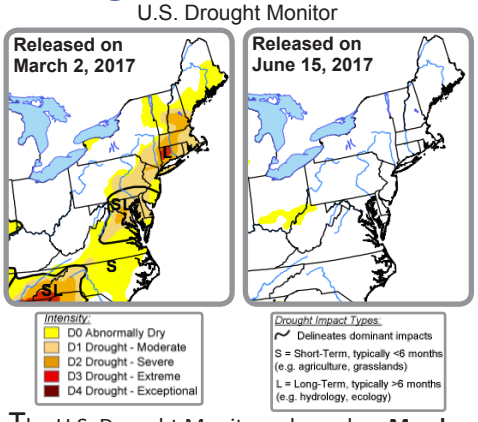


The Northeast had its sixth wettest **spring** since 1895 with 123% of normal precipitation. All twelve states and Ohio were wetter than normal, with nine ranking this spring among their top 20 wettest. Despite seven states being drier than normal, **March** precipitation was 101% of normal for the Northeast. Ohio was wetter than normal. In **April**, the Northeast received 120% of normal precipitation, with nine states and Ohio being wetter than normal. Three states ranked this April among their top 20 wettest on record. The Northeast had its fourth wettest **May** with 145% of normal precipitation. For all states except Connecticut, this May ranked within the top 20 wettest.

Normals based on 1981–2010

Drought in the Northeast

U.S. Drought Monitor



The U.S. Drought Monitor released on **March 2** showed 27% of the Northeast in a moderate or severe drought. Conditions eased during the month so that by early **April**, 11% of the region was in a drought. Above-normal precipitation in April allowed conditions to continue to improve. By late April, the Northeast became free of severe drought for the first time since late June 2016. Above-normal precipitation continued in **May**, and by mid-month, the region became drought-free for the first time since mid-April 2016. Abnormally dry conditions eased in Pennsylvania and Connecticut in early **June** but were introduced in portions of West Virginia and Ohio in mid-June.

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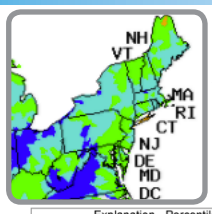
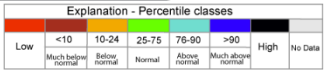
Regional - *Impacts and Updates for March–May 2017*

Drought

March average streamflow was normal or below normal for a majority of the Northeast, while April and May average streamflow was normal or above normal. Groundwater and reservoir levels increased during spring, returning to normal or above normal in many areas, but remaining below normal in a few areas. The Massachusetts Water Resources Authority urged customers to conserve water as the Quabbin Reservoir continued to be below normal capacity during spring. On April 20, Manchester, NH, officials lifted voluntary water restrictions that had been in effect since October 2016 as the city's water supply had returned to full capacity. According to an April 21 press release, all of Connecticut Water's reservoirs throughout the state were at 100% of capacity, so the water supply advisory was lifted. Aquarion's Bridgeport and Greenwich, CT, reservoirs were at near to above-average capacity in April and May, but its Stamford reservoir was still below average capacity at 88.4% on April 25 and 92.5% on May 23. All 34 reservoir systems monitored by the Connecticut Department of Public Health were at 89% of capacity or greater for April, with 28 systems at 100% capacity or greater. The overall state capacity was 100.4%. The Drought Alert for Worcester, MA, was lifted effective May 22 as the city's water supply was at 98.0%. With improving conditions, drought declarations eased in several states.



Average streamflow for May was normal or above normal for most of the region. Credit: USGS WaterWatch.



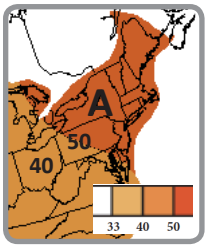
Above: A nearly submerged dock in Sodus Bay, NY. Credit: Mary Austerman/ NYSG. Below: A saturated field in Aurora, NY. Credit: Jenn Thomas-Murphy.

Spring Conditions

Mild temperatures led to an early start to the tick season this spring and likely contributed to a greater number of ticks. After early development due to a mild February, about half of the Yoshino cherry blossoms in Washington, D.C., were damaged by frost in mid-March. Above-normal precipitation in April and May alleviated abnormally dry and drought conditions in the Northeast. Preliminary data indicated that the Lake Ontario basin had its wettest May since 1900 and the lake had its all-time highest monthly mean water level since 1918. Along the shorelines of Lake Ontario and the St. Lawrence River, buildings, roads, docks, and beaches were flooded. The high water washed away land, trees, and breakwalls, and left a few homes on the verge of falling into the lake. For more information on the Lake Ontario flooding, see the Great Lakes Spring 2017 Quarterly: www.drought.gov/drought/resources/reports. Saturated soil caused burials at a historic cemetery in Ogdensburg, NY, to be delayed. Wet conditions, such as standing water in fields, delayed planting and field work in much of the region. Some farmers may not be able to plant their intended acreage in time, while others had to replant crops. Pastures generally benefitted from the wet weather, though. Above-normal precipitation activated a fungus that kills gypsy moth caterpillars; however, with a large caterpillar population again this year, significant defoliation of trees is possible and it remains unclear how many will be killed off by the fungus.

Regional - *Outlook for Summer 2017*

Temperature and Precipitation



A: Above-normal
EC: Equal chances of above-, near, or below-normal
#: Probability of above-normal

Normal July–September average temperatures range from the upper 50s in northern New York and northern New England to the mid 70s in the Mid-Atlantic. NOAA's Climate Prediction Center (CPC) is calling for an increased chance of above-normal temperatures (left map) for the Northeast and Ohio for July–September. The precipitation outlook calls for equal chances of below-, near-, or above-normal precipitation. Normal July–September precipitation ranges from less than 10 inches near Lake Ontario in New York to more than 15 inches in New York's Catskills and higher elevations of Vermont and New Hampshire. CPC indicates that ENSO-neutral conditions are favored during summer, so ENSO was not a major factor in the temperature and precipitation outlooks. The forecast for the Northeast was based on computer models and long-term climate trends.

While the Northeast was drought-free as of early June, conditions continued to be monitored. Areas of drought could redevelop if there were a long period of dryness and unusually warm temperatures, particularly in spots with lingering groundwater and reservoir issues.

Atlantic Hurricane Season

	2017 Atlantic Season Outlook	Average Season
Number of Named Storms	11-17	12
Number of Hurricanes	5-9	6
Number of Major Hurricanes	2-4	3

NOAA's 2017 Atlantic hurricane outlook indicates there is a 45% chance that this season will be more active than normal, a 35% chance the season will be near-normal, and a 20% chance the season will be below normal. With an above-normal season most likely, the outlook calls for "a 70% likelihood of 11–17 named storms (winds of 39 mph or higher), of which 5–9 could become hurricanes (winds of 74 mph or higher), including 2–4 major hurricanes (Category 3, 4 or 5; winds of 111 mph or higher)." The Atlantic hurricane season runs from June 1 through November 30, with a peak from mid-August to late October. However, there has already been a tropical system this year (which was accounted for in the forecast): Tropical Storm Arlene in April. The system was short-lived and did not impact land, but according to NOAA's National Hurricane Center, it was only the second tropical storm in April since satellite data began.

Factors leading to the forecast for an above-normal season included near- to above-average sea surface temperatures in the main area of the Atlantic where hurricanes develop, near- to weaker-than-average vertical wind shear (change in direction and/or speed with altitude) in this main development area, and expected ENSO-neutral or weak El Niño conditions.

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